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# Cooperative Economic Insect Report

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PLANT PROTECTION AND QUARANTINE PROGRAMS
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
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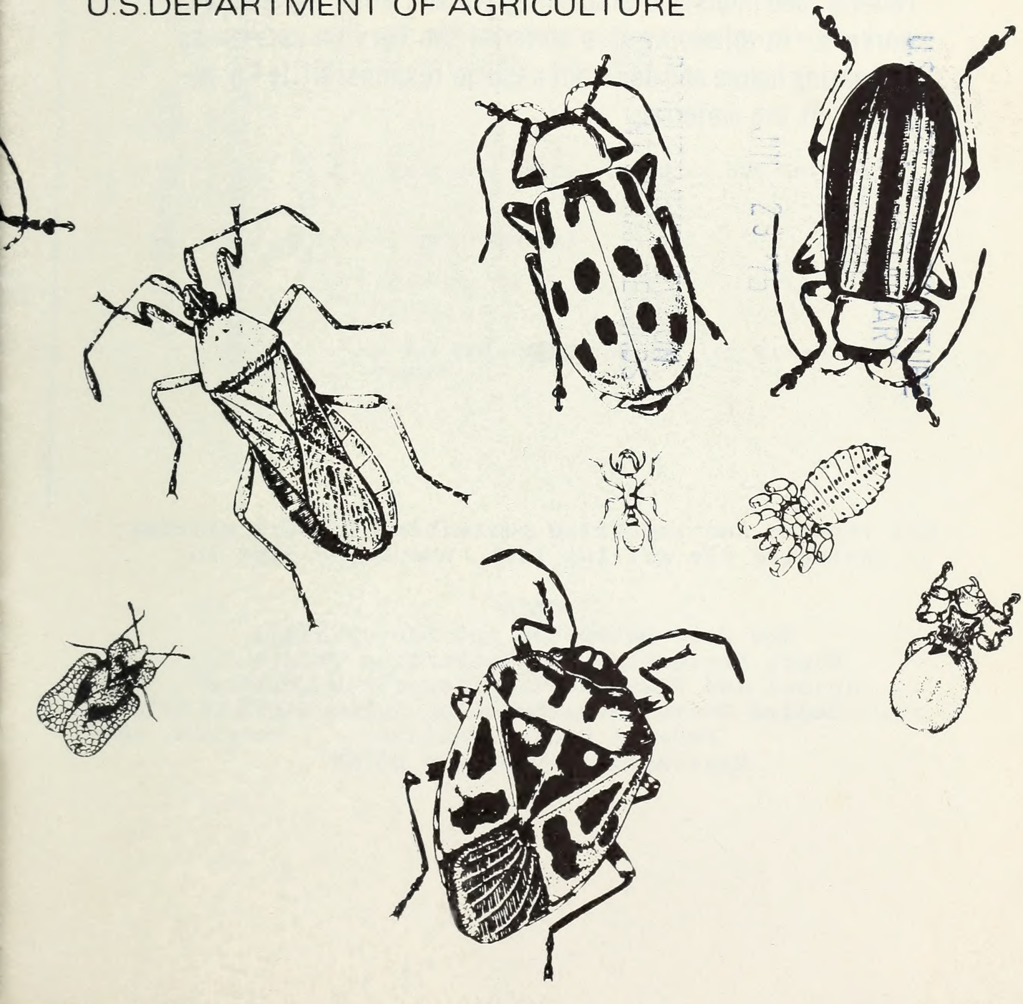

ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PLANT PROTECTION AND QUARANTINE PROGRAMS
NEW PEST DETECTION AND SURVEY STAFF

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Service serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 25 June 13, 1975 Number 24

# COOPERATIVE ECONOMIC INSECT REPORT

## HIGHLIGHTS

### Current Conditions

ARMYWORM outbreak continues. Biological and chemical controls exerting control in some States. (p. 479).

First-generation EUROPEAN CORN BORER larvae appearing. (p. 481).

ALFALFA WEEVIL larvae in economic numbers in Nevada, New Mexico, Kansas, South Dakota, Iowa, Wisconsin, Kentucky, and Maryland. (pp. 483-484).

FALL CANKERWORM heavy in New York, Pennsylvania, and Indiana. (p. 490).

FACE FLY increasing in eastern States. (p. 491).

Damaging numbers of CEREAL LEAF BEETLE in Virginia, West Virginia, Maryland, and Michigan. (p. 493).

### Detection

SPOTTED ALFALFA APHID is a new State record in New York. (p. 481).

For new county records, see page 494.

### Special Report

Pheromone-Baited Traps for Detecting the Smaller European Elm Bark Beetle (pp. 497-500).

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Reports in this issue are for week ending June 6 unless otherwise indicated.

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## WEATHER OF THE WEEK ENDING JUNE 8

Reprinted from Weekly Weather and Crop Bulletin supplied by National Weather Service, NOAA.

HIGHLIGHTS: Cool air moving into the central portion of the country and then south and east clashed with warm moist air from the Gulf of Mexico to set off a week of violent weather. Tornadoes, high winds, and hail was reported from Montana to Texas and eastward to Florida and New England. Heavy rain, accumulated to over 2 inches, fell in a large portion of the central Plains and New England causing flash floods along the small stream drainages. Considerable property damage resulted from winds, hail, and flood.

PRECIPITATION: A succession of squall lines in the central Plains, an old front in the southeast, and a new one in the Pacific Northwest was responsible for most of the precipitation on Monday. From southwest Nebraska to northeast Kansas severe weather hit with a vengeance. At least one tornado, windstorms, hail, and flash floods were reported in the area. Another line of thunderstorms from Lake Erie to southwest Ohio produced tornadoes. In the southeast, most severe weather was in Florida. In the Pacific Northwest, thunderstorms and showers occurred from Washington and Oregon to Montana. On Tuesday, thunderstorm activity developed throughout the Plains from Texas to the Dakotas and in the northern Rockies. Other showers and thunderstorms occurred from the northern Appalachians to the middle and upper Atlantic coast and in southern Florida. Again the most severe activity was in the northern Plains and Montana where windstorms and hail accompanied many of the thunderstorms. A frontal system set off

Weather of the week continued on page 496.

## SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMYWORM (Pseudaletia unipuncta) - OKLAHOMA - Heavy, 10-12 per square foot, in rank or lodged wheat in Custer, Washita, Caddo, and Beckham Counties week ending May 30. Ranged 0-15 per square foot in Roger Mills County. Most damage appears over in southwest counties. Parasite populations (Apanteles sp. and tachina flies) and predators (ground beetles) heavy in southwest and west-central areas. Parasitism began in northern areas. P. unipuncta currently ranged 3-5 per square foot in some Ellis County areas and 2-3 per square foot in lodged spots in irrigated wheat in Texas County. Moderate infestations decreased in Garfield County. Young sorghum damaged in Washita County. (Okla. Coop. Sur.).

KANSAS - Heavy infestations in small grains still limited to scattered fields in eastern counties of south-central and central districts and in Cowley County. Very little treating in other areas. Substantial infestations occasionally found in lodged or thick stands of wheat in northeast and east-central districts, particularly in Kaw Valley (up to 7 per drill row foot in lodged or thick stands in Brown and Douglas Counties and 9 in Shawnee County). Up to 15 per square foot in lodged wheat in Kiowa County with 2-3 per row foot in upright wheat in same field and 10-12 per row foot in thick, lodged wheat in Barton County. No serious feeding damage to heads. Some damaging infestations in Douglas County bromegrass grown for hay and seed; up to 8 larvae per square foot in one field; second bromegrass field (treated) had been defoliated and had about 50 percent of seed heads severed. Infestations heavy on bromegrass in Atchison County. Averaged 6 per square foot in rye grown for seed and silage in Douglas County (treated). Most larvae in wheat in south-central, east-central, and central districts and in Riley County half to full grown. Parasitism by braconid wasps noticeable in all areas surveyed with up to 20 percent in Kiowa County. Some parasitism by tachina flies in Kiowa County. (Bell). NEBRASKA - Armyworm averaged less than one larva per linear row foot in 10 wheat-fields in Lancaster, Nemaha, Johnson, Richardson, and Pawnee Counties. (Miller).

ARKANSAS - Armyworm feeding heavy on fescue, orchardgrass, and Bermuda grass in Benton and Madison Counties. Infestation about over for season; another generation not expected. MISSOURI - Larvae in marginal rows of corn in north-central and northwestern areas. These fields next to grass hayfields that have been harvested. Larvae heavy, 2-36 per row foot, on small grains throughout northern areas. Many larvae small. Larvae moderate to heavy, 1-40 per square foot, in most grass fields checked in north-central and northwestern areas. Mostly second and third instars. (Munson). IOWA - Larvae damaged corn in Henry and Lee Counties; averaged one per 2 plants, fed in whorls. (Iowa Ins. Sur.).

KENTUCKY - Armyworm damaged corn in western area. Heaviest damage in Henderson County, 300 acres lost in Hardin County replanted. Damaged small grains, mostly wheat and barley, statewide. Light to moderate damage to wheat in Warren, Graves, and Todd Counties. Damage spotty in Christian County. Early controls (about 10,000 acres) resulted in minimal damage. Infestations in Union, Henderson, and Daviess Counties moderate to heavy. About 50 percent of fields had some damage with 15-20 percent of fields treated or replanted in Daviess County. About 5,000 acres of small grains had light to moderate infestations. (Barnett). TENNESSEE - Acres damaged by armyworm (acres treated) by county: Henderson 100 of small grains; Macon 400 (400) of corn, small grains, and pastures; Montgomery 500 (500) of small grains; Obion 7,000 (6,000) of corn, small grains, and pastures; Tipton 45 (45) of small grains and pastures; Trousdale 250 (250) of corn; Bradley 72 (72) of corn and small grains. (Martin et al.). VIRGINIA - Infestations heavy in Northern Neck region; damage primarily to small grain. About 1,500 acres treated in Westmoreland County, 4,000 acres in Northumberland County. (Allen).

MARYLAND - Armyworm populations week ending May 30 heaviest of past 10 years statewide. Record population levels on Eastern Shore small grains decreased slightly for current period. Fully grown larvae 15-20 per square foot in heaviest infested fields in Dorchester, Kent, and Caroline Counties. Early detection and quick grower reaction to outbreak saved several million dollars (estimated). About 600 acres lost. Potential acreage loss estimated between 10,000 and 15,000 acres. Central area situation in no-till corn and small grain at outbreak level but not as serious as on Eastern Shore. Larvae in central area mostly third or fourth instars and feeding in no-till corn. Heaviest counts ranged 1-3 per plant in 600 acres in Howard, Carroll, and Frederick Counties. Damage in central area expected to peak next 10 days. Field treatment of small grain continues to decrease on Eastern Shore but steadily increasing on no-till corn and small grain in central area. (U. Md., Ent. Dept.). NEW JERSEY - Injured corn at Ringoes and Flemington, Hunterdon County, by June 5. (Ins.-Dis. Newsltr.).

ASTER LEAFHOPPER (Macrosteles fascifrons) - NORTH DAKOTA - Spring migrants 4-30 (average 15) per 100 sweeps of winter wheat in Morton, Stark, and Golden Valley Counties. Up to 33 (average 20) per 100 sweeps on Stutsman County barley. (Scholl).

CORN EARWORM (Heliothis zea) - INDIANA - First adult of season in Gibson County blacklight trap. (Barry). NEW JERSEY - First moth of season collected May 29 in blacklight trap near Cherry Hill, Camden County. (Ins.-Dis. Newsltr.).

CORN LEAF APHID (Rhopalosiphum maidis) - ARKANSAS - Reported on young sorghum in Clay County. (Boyer). OKLAHOMA - Up to 150 per plant in 12 to 16-inch grain sorghum in Johnston County week ending May 30. Currently averaged 150 per plant on 24-inch Garvin County sorghum. Moderate on 24-inch Wagoner County sorghum and light in seedling Texas County sorghum. (Okla. Coop. Sur.). TEXAS - Light to medium in Tom Green, Runnels, and Taylor Counties. Light in Bell and Navarro Counties. (McWhorter, Hoelscher). ARIZONA - Small colonies developing down in whorls in several sorghum fields checked in Cochise County. (Ariz. Coop. Sur.).

GREENBUG (Schizaphis graminum) - ARIZONA - Few fields of grain sorghum treated at Kansas Settlement, Cochise County. Starting buildup in whorls of 6-inch plants. (Ariz. Coop. Sur.). TEXAS - Light on young sorghum in isolated fields in Reeves County. (Neeb). OKLAHOMA - Light on seedling sorghum in Texas County. (Okla. Coop. Sur.). KANSAS - Substantial flights of alates into seedling sorghum, Sudan, and sorghum X Sudan hybrids in southeast, east-central, south-central, and central districts. Fields in Riley, Saline, and Dickinson Counties carried many alates along with small immatures (up to 44 total per plant on 3-inch sorghum in Dickinson County of which an average of 12 per plant winged). Some treating for greenbug in Franklin County. Some heavy infestations in Elk County. (Bell). NEBRASKA - Sorghum field in Clay County had 15 percent of plants infested. Up to 19 per plant, 18 percent alates. Light,20-72 per 100 sweeps,in 4 wheatfields in Johnson and Nemaha Counties. (Monke, Miller). MISSOURI - Very light on corn in north-central area. (Munson).

POTATO LEAFHOPPER (Empoasca fabae) - MINNESOTA - Adults decreased; ranged 20-30 per 100 sweeps. Nymphs trace. (Minn. Pest Rpt.). WISCONSIN - Averaged 0.5-1 per sweep in most alfalfa. Averaged about 2 per 10 sweeps in Door County. (Wis. Ins. Sur.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - NEW YORK - Collected from alfalfa at Ithaca, Tompkins County, during August 1974 by N.O. Cooley. Determined by L.M. Russell. This is a new State record. Present in collections from July through August past 2 summers. (Cooley).

TOBACCO BUDWORM (Heliothis virescens) - NORTH CAROLINA - Surveys of 280 tobacco fields in Bladen County revealed 6.5 percent of fields above 10 percent economic threshold level with one field at 50 percent and two at 40 percent. Average infestation of these fields needing treatment ranged 14-15 percent. All controls adequate. Surveys of 180 fields in Lenoir County revealed 9.2 percent needing treatment. Average infestation at or above threshold 11-12 percent with one field at 35 percent. Controls effective. (Hunt).

## CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - FLORIDA - One adult taken in blacklight trap at Quincy, Gadsden County, April 24, 1975. Collected by A.E. Knutson. Determined by D.C. Ferguson. (Fla. Coop. Sur.). See CEIR 24(31):598 for first time species found feeding on crop in State. (PPQ). DELAWARE - Heavy in some Sussex County corn. Ranged 70-95 percent in untreated corn with some third and fourth instars present. Adults 3-4 per night in Sussex County blacklight trap. (Burbutis). NEW JERSEY - Egg masses beginning to hatch in sweet corn. Catches in southern county blacklight traps ranged 10-20 per night May 30 to June 2. First instars in plant whorls in several fields (June 3) in Cumberland County. (Ins.-Dis. Newsltr.).

NEW YORK - First-brood moth catches heavy in light trap May 26 to June 1 in Ontario County. (Davis, Chapman). MICHIGAN - Adult activity increased markedly. (Cress). ILLINOIS - Egg masses and whorl feeding on 40-inch corn in Pope County. First report of season. (Ill. Ins. Rpt.). WISCONSIN - Adults, mostly females, appearing at Mazomanie, Dane County, and Hancock, Waushara County, in good numbers. Moths observed in Kenosha County. (Wis. Ins. Sur.). MISSOURI - Leaf feeding on 1-12 percent of corn in north-central and northwestern areas. Egg masses on 1-9 percent of plants. (Munson). NEBRASKA - Adults and pupae in central area on corn 13 to 22 inches in extended leaf-height. Adults in light traps in Clay County. (Raun, Peters).

BLACK CUTWORM (Agrotis ipsilon) - MISSOURI - Nearly full-grown larvae light on corn throughout north-central and northwestern areas. Pupation well underway. (Munson). IOWA - Larvae damaged corn in Boone, Butler, Greene, Guthrie, Hamilton, Hardin, Howard, Lee, Linn, Lucas, Mills, Monona, O'Brien, Plymouth, Polk, Sac, Story, Tama, and Warren Counties. Many fields replanted as stands reduced to 12,000-15,000 plants per acre. Larvae ranged 0.75-1.5 inches long. Damage expected to increase in northern counties. Sprays applied. Cool, wet weather enhanced control. Damage expected across State for 10-15 days. (Iowa Ins. Sur.). ILLINOIS - Some cutting in every cornfield checked in Richland County. Damage ranged from less than one percent to 50+ percent. Many fields replanted. (Ill. Ins. Rpt.).

STALK BORER (Papaipema nebris) - IOWA - First report of damage to corn in Crawford County. Infested corn near grass waterway. (Iowa Ins. Sur.).

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - ALABAMA - First and second instars (first of season) in pretassel corn in Morgan County. (Houston). KANSAS - Survival of overwintered larvae heavy in corn stubble in some fields surveyed this spring in counties with the heaviest infestations for 1974. (Bell).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - NEBRASKA - Damage light in 7 of 8 fields in Nemaha, Johnson, Richardson, and Pawnee Counties. (Raun, Miller). NORTH CAROLINA - High incidence of damage in no-till corn across the Piedmont. Larval damage averaged 10+ percent in untreated soil. Infestation levels ranged from 3-5 percent to 40 percent with corresponding stand reduction. (Van Duyn, Hunt).

CORN FLEA BEETLE (Chaetocnema pulicaria) - ILLINOIS - Cornfield with previous heavy infestation in Richland County noted with severe case of Stewarts disease. About 70 percent of plants show symptoms. (Ill. Ins. Rpt.).

A WEEVIL (Sphenophorus callosus) - NORTH CAROLINA - Damage to corn continued across the Coastal Plain particularly in late-planted fields. Severe damage in Craven, Lenoir, Bladen, and Tyrrell Counties. (Lamm, Van Duyn).

## SMALL GRAINS

WHEAT STEM MAGGOT (Meromyza americana) - KANSAS - Less than one percent of stems affected but damage common in wheat surveyed in west-central and northwest districts. (Bell).

HESSIAN FLY (Mayetiola destructor) - KANSAS - Heavier this year in southeast area than for past several years, although most wheat in area planted after fly-free date. Infestations occasionally noted in wheat in west-central and northwest districts with some stem breakage. (Bell).

## TURF, PASTURES, RANGELAND

A GRASS BUG (Labops hesperius) - UTAH - Grass bugs, chiefly this species at higher altitudes, severely discolored large areas of crested wheatgrass in Diamond Fork area, Utah County. Mostly adults averaged 200 per sweep at one location. (Haws).

BEET WEBWORM (Loxostege sticticalis) - SOUTH DAKOTA - Common in range pastures throughout west river area. Adults heavy in Mead, Haakon, Stanley, and southern Ziebach Counties. No apparent damage to grasses. (McDaniel).

## FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - NEVADA - Larvae 5-25 per sweep of alfalfa in north end of Fish Lake Valley, Esmeralda County. Larvae 7-25 (average 20) per sweep in alfalfa hayfields in Winnemucca Valley, Washoe County. (Lauderdale, Bechtel). UTAH - Egg laying much increased past few warm days. Hatch still light, many overwintered weevils on Cache, Box Elder, and Weber County alfalfa. (Davis, Knowlton). COLORADO - Averaged 10 larvae per sweep of alfalfa in Washington County. (Hantsbarger). NEW MEXICO - Larvae 135-415 per 25 sweeps of alfalfa at Belen, Valencia County; damage heavy. Decreased; larvae 3-5 and adults 2-5 per 25 sweeps in Quay and Union Counties. (N.M. Coop. Rpt.).

KANSAS - Alfalfa weevil larvae averaged 150 per sweep in Decatur County field with much plant damage. Up to 30 larvae per sweep in Rawlins County. Heavy adult infestations preventing regrowth in east-central district and in some central district counties. (Bell). NEBRASKA - Larval activity peaked and on decline; pupae numerous; adult counts on rise. Most fields in southeast district cut and/or treated. Activity in cut fields generally low, due to treatment. (Stevens et al.). SOUTH DAKOTA - Surveys showed larvae in area south of U.S. Interstate 90 and east of Missouri River may be numerous enough to delay second-crop growth. (Walgenbach). NORTH DAKOTA - Adults 4-100 (average 40) per 100 sweeps in McKenzie County. (Brandvik).

IOWA - Alfalfa weevil larvae severely damaged alfalfa near harvest stage in Monona, Carroll, Jackson, Shelby, Crawford, and Woodbury Counties. Stubble sprays applied in some fields in these counties and in Lee County. (Iowa Ins. Sur.). MISSOURI - Adults averaged 24 per square foot in north-central area. (Huggans). WISCONSIN - Larvae, adults, and alfalfa tip injury heavy in Door County. Averages of up to 12 larvae per sweep and over 50-percent tip feeding in most fields north of Sturgeon Bay. Averages of 4 larvae per sweep and 40-percent tip feeding south of Sturgeon Bay. Larvae mostly early instars. Infestations significant north of Sturgeon Bay for third year. (Wis. Ins. Sur.).

KENTUCKY - Alfalfa weevil adults heavily damaged alfalfa immediately after first cutting in Warren County. (Barnett). MARYLAND - Moderate to heavy damage continued throughout central area week ending May 30. Peak injury passed and most heavy infestations controlled on early cut alfalfa. Pupation underway in several central locations. Currently, record heavy population decreasing rapidly with increased pupation and first cuttings of alfalfa. Light stubble losses expected in Frederick and Washington Counties. (U. Md., Ent. Dept.). NEW YORK - Activity in alfalfa lighter than in 1974 in Broome, Steuben, Seneca, and Cayuga Counties. (Willson).

VARIEGATED CUTWORM (Peridroma saucia) - MISSOURI - Heavy populations in untreated forage legumes still preventing regrowth in northern areas. Larvae 3-21 per square foot, mostly third and fourth instar. Some pupation. (Munson). KANSAS - Heavy infestations preventing regrowth in scattered alfalfa fields throughout east-central and northeast districts and eastern counties of central districts. Some of heaviest infestations in Franklin, Osage, Lyon, Shawnee, Cloud, Ellsworth, and Marshall Counties. (Bell). NEBRASKA - Heavy in southeast and east districts. Fields checked in Thayer County averaged 287 larvae per 100 sweeps. Fields in Lancaster, Johnson, Nemaha, and Pawnee Counties ranged 8-68 larvae per 100 sweeps and averaged 8 per linear foot of windrow in cut fields. Pawnee County field averaged 45 larvae per square foot as larvae moved between field and fence row. (Peters, Miller).

AN APHID (Acyrthosiphon sp., loti group) - CALIFORNIA - Infested alfalfa at Woodland, Yolo County. Collected by W. Comfort May 12, 1975. Determined by T. Kono. This is a new county record. (Cal. Coop. Rpt.). ARIZONA - Collected in Cochise County at Kansas Settlement by S. Kozloski and at Cochise by S. Kozloski and J. May. Collected in Maricopa County at Mesa, Kyrene, and Tempe by J. May. All determined by J. May. One field treated at Yuma, Yuma County; damage unknown. This aphid dominant alfalfa aphid. (Ariz. Coop. Sur.).NEVADA - This species and A. pisum (pea aphid) ranged 12-100+ per sweep of alfalfa in north end of Fish Lake Valley, Esmeralda County. Acyrthosiphon sp., loti group, ranged 4-99+ percent of populations sampled. Plants yellowed and stunted with large amounts of honeydew in field with 1,000+ per sweep and 99+ percent population of Acyrthosiphon sp., loti group. Esmeralda County is a new county record for Acyrthosiphon sp., loti group; collected on alfalfa in Fish Lake Valley by R.W. Lauderdale May 30, 1975. Determined by R.C. Bechtel. Acyrthosiphon sp., loti group, comprised 94-99 percent of populations sampled in 3 Carson Valley fields, Douglas County. Counts ranged 30-100+ per sweep. (Lauderdale, Bechtel).

MEADOW SPITTLEBUG (Philaenus spumarius) - IOWA - Nymphs averaged 2 per stem, damaged red clover in Poweshiek County, treatment applied. Nymphs up to one per stem on alfalfa in Cass, Marion, and Clarke Counties. (Iowa Ins. Sur.).

ALFALFA BLOTCH LEAFMINER (Agromyza frontella) - NEW YORK - Much activity in alfalfa reported in Oneida County where most fields affected; pinholes very numerous in Broome County. Severe at 2 sites in Cayuga County. (Field et al.).

## SOYBEANS

MEXICAN BEAN BEETLE (Epilachna varivestis) - MARYLAND - Over-wintered adults active on soybeans in all southern areas and the Eastern Shore. Heaviest injury centered in Queen Annes, Kent, Talbot, and upper Caroline Counties. Complete defoliation in several 0.5 to 1.0-acre sections. Soybeans generally in two and four-leaf stages. Some treatment applied to maintain seedling stands; most fields should outgrow moderate injury. (U. Md., Ent. Dept.). INDIANA - One adult per 3 soybean plants in field in 3-trifoliate stage in Orange County. (Anderson).

BEAN LEAF BEETLE (Cerotoma trifurcata) - KENTUCKY - Very light damage to seedling soybeans in Hardin, Christian, Warren, Union Crittenden, Henderson, and Daviess Counties. (Barnett).

A THRIPS (Sericothrips variabilis) - INDIANA - Up to 75 per soybean plant in Martin County field; soybeans had 2-3 trifoliate leaves. (Hallman).

## COTTON

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Activity generally increased in Rio Grande Valley. Overwintered adults active in north-central area. Overwintered adults relatively heavy on pin-head squares. Still heavy in Blackland area cotton fields. Increased in pheromone traps at Temple and Blackland. Infestations up to 14 percent in Fayette County. Only one weevil captured in Leggett traps in Rolling Plains. (Deer et al.). MISSISSIPPI - Adults found in all 120 Leggett traps in Quitman County. Adults one per 400 cotton terminals in Yalobusha, Monroe, and Montgomery Counties and one per 300 plants checked in 1,500 acres in Carroll County. (Robinson).

ALABAMA - First egg-laying and feeding punctures in one-fourth to two-thirds grown squares (fruiting buds) in 5-acre early planted cotton field in Montgomery County; 45 percent of squares punctured. Adults 50-221 per acre in 4 Covington County fields in 4 to 7-leaf stage. (Hanks et al.). TENNESSEE - Overwintered weevils very heavy in regularly infested portion of cotton area. Terminal feeding very evident in seedling cotton. Catches in pheromone traps in McNairy and Hardeman Counties ranged 4-400 weevils per trap, about 10 times average counts of previous years. (Locke, Pendergrass).

BOLLWORM (Heliothis zea) - ALABAMA - Larvae of this species and H. virescens (tobacco budworm) heavy, 10-25 per 100 terminals, in several presquare cotton fields in Montgomery County. Damaged 50+ terminals per 100 stalks. Eggs 2-33 per 100 terminals in 10 fields. (McCabe et al.). TEXAS - H. zea activity decreased in Rio Grande Valley. Activity as follows: Eggs less than 5 percent, larvae less than 2 percent, and damaged green squares less than 5 percent. (Deer, Norman).

COTTON FLEAHOPPER (Pseudatomoscelis seriatus) - TEXAS - Decreased in Rio Grande Valley. Most fields averaged less than 10 percent. Light in some fields at Hillsboro. Nymphs and adults in presquaring and squaring cotton in Hill and Ellis Counties. Light in south-central area. (Norman et al.).

LYGUS BUGS (Lygus sp.) - TEXAS - Populations heavy enough for controls in some fields in Hill and Ellis Counties. (Buxkemper).

## TOBACCO

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - MARYLAND - Adults active in all tobacco areas in southern area. Ranged 2-6 per plant on new transplants. Most fields averaged 2 adults per plant. Injury and population levels expected to increase rapidly. (U. Md., Ent. Dept.).

VEGETABLE WEEVIL (Listroderes costirostris) - MARYLAND - Damage by this species and Phthorimaea operculella (potato tuberworm) well above normal with 7-8 growers treating tobacco beds in order to save transplants. Most injury restricted to St. Marys and Charles Counties. (U. Md., Ent. Dept.).

BLACK CUTWORM (Agrotis ipsilon) - MARYLAND - Populations generally well above normal in newly planted tobacco. Larvae cut 2-6 percent of plants in several 100 acres in Charles and St. Marys Counties. Treatment difficult and replanting required. (U. Md., Ent. Dept.).

## SUGAR BEETS

SUGARBEET ROOT MAGGOT (Tetanops myopaeformis) - NORTH DAKOTA - Adults showing up in McKenzie County. Adults at Fargo, Cass County, week of May 28 to June 2. (Brandvik, Schulz).

## MISCELLANEOUS FIELD CROPS

SUNFLOWER BEETLE (Zygogramma exclamationis) - NORTH DAKOTA - Adults active in sunflower field in Grand Forks County. (Scholl).

CARROT BEETLE (Bothynus gibbosus) - TEXAS - Peaked in majority of surveyed sunflower fields in Panhandle counties. (McIntyre). OKLAHOMA - Blacklight trap catches heavy in southwestern counties week ending May 30. Counts as follows: Tipton 8,099; Greer 2,493; Jackson 250. Current catches by county as follows: Tillman 3,775; Greer 377; and Jackson 44. (Okla. Coop. Sur.).

## POTATOES, TOMATOES, PEPPERS

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - TEXAS - Moderate to heavy damage to potato foliage in gardens in Baylor, Wilbarger, and Young Counties. Active in McCulloch County. (Boring, McWhorter). KANSAS - First of season. Small larvae light on potatoes in Douglas County. (Bell). VIRGINIA - Most egg masses at Painter, Accomack County, hatched; many overwintered beetles still laying eggs. Development slowest observed since 1947 at least. Larvae no older than third instar. (Hofmaster, May 28). MARYLAND - Adults still active and ovipositing in all areas week ending May 30. Half-grown larvae in all areas. Commercial potato and tomato growers began preventative treatment programs on Eastern Shore. (U. Md., Ent. Dept.). RHODE ISLAND - Initial egg hatch of first generation noted June 4 in Providence County. (Partyka).

## BEANS AND PEAS

PEA APHID (Acyrthosiphon pisum) - WISCONSIN - Still light on peas, under 3 per 50 sweeps, in Grant, Sauk, Rock, Jefferson, La Crosse, and Trempealeau Counties. Reproduction noted in Trempealeau County. (Wis. Ins. Sur.).

## CUCURBITS

SQUASH BUG (Anasa tristis) - TEXAS - Beginning to feed on squash throughout north-central area. Increasing numbers throughout Trans-Pecos area. (Turney et al.).

## GENERAL VEGETABLES

BROWN WHEAT MITE (Petrobia latens) - NEVADA - Heavy on 80 acres of garlic at Smith Valley, Lyon County; treated. (Sophia).

## HAWAII INSECT REPORT

General Vegetables - All stages of CARMINE SPIDER MITE (Tetranychus cinnabarinus) light in acre of eggplant at Pearl City and in backyard plantings of eggplant and tomato at Ewa, Oahu. Increases expected during summer on snap beans, eggplant, and other hosts. (Kaichi, Sanidad). All larval stages of DIAMONDBACK MOTH (Plutella xylostella) severe in 30 square yards of broccoli at Ewa. Ranged 15-20 per mature leaf. Damage moderate to heavy with 20-40 percent of leaf area destroyed. Flower heads damaged. Larvae light to moderate in same area on radish, kai choy, head cabbage, and broccoli. (Lai, Mau). CABBAGE WEBWORM (Hellula rogatalis) larvae light to heavy on about 30 percent of plants inspected in small plantings of daikon and kai choy at Ewa. Up to 80 percent of daikon planting infested. Damage to kai choy generally heavy; damage to daikon light. (Kaichi, Sanidad). Heavy TOBACCO FLEA BEETLE (Epitrix hirtipennis) damage on eggplant foliage at Ewa. BROAD MITE (Polyphagotarsonemus latus) heavy in same planting, averaged 40+ per square inch of leaf. (Lai, Mau).

## CORRECTIONS

CEIR 25(22):447 - SCREWWORM - Amend number of sterile fly releases as follows: Texas 113,072,800; New Mexico 152,000; Arizona 4,068,000. (Vet. Serv.).

CODLING MOTH (Laspeyresia pomonella) - MASSACHUSETTS - Moth activity increased in Essex, Middlesex, and Worcester County fruit areas. Moths averaged 20 per pheromone trap on perimeters of orchards, 12 per trap inside orchards. (Costante). PENNSYLVANIA - First larval entries in apple noted at Donald, Yakima County, May 29 and in pears at Wapato, Yakima County, May 31. Adults 50 or more in pheromone trap at Pullman, Whitman County, June 3. (Eves et al.). MICHIGAN - Pheromone trap catches ranged 5-7 per week in commercial apple orchards near Hart, Oceana County. Lighter populations noted farther south. (Cater). UTAH - First moth flight light in Cache County north of Logan night of May 31 and June 1. Moth catch light in pheromone traps May 30 at Perry, Box Elder County. First moths taken in Utah County bait traps June 3. (Davis).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - MASSACHUSETTS - Activity unchanged in Essex, Middlesex, and Worcester Counties. Ranged 2-3 per trap in treated orchards. (Costante). CONNECTICUT - Tip damage of peaches at New Haven, New Haven County. (Savos). NEW JERSEY - Larvae flagged terminals and entered fruit in peach block at Elm, Camden County; much injury noted. (Ins.-Dis. Newsltr.).

LESSER PEACHTREE BORER (Synanthedon pictipes) - NEW YORK - First adults of season in pheromone traps May 26 to June 1. (Tette). MICHIGAN - Active on stone fruits in southwestern area. (Liebherr).

REDBANDED LEAFROLLER (Argyrotaenia velutinana) - MASSACHUSETTS - Moth activity increased in Essex, Middlesex, and Worcester Counties; averaged 14 per trap in treated orchards. (Costante).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - MASSACHUSETTS - Appeared in peach and apple orchards in Essex, Middlesex, and Worcester Counties much earlier than in previous 2-3 years. (Costante).

PLUM CURCULIO (Conotrachelus nenuphar) - MASSACHUSETTS - Activity decreased in orchards in Essex, Middlesex, and Worcester Counties. Damaged plum at Agawam, Hampden County; 75 percent of fruit showed oviposition damage on trees surveyed. (Adams, Costante). MICHIGAN - Oviposition scars on apples near Grand Rapids, Kent County, June 2. Limited damage to prunes observed by June 5. (Schwallier, Klackle).

WHITE APPLE LEAFHOPPER (Typhlocyba pomaria) - NEW JERSEY - Plentiful in several central and northern county apple orchards. (Ins.-Dis. Newsltr.). MICHIGAN - First and second instars in Oceana and Mason Counties. (Liebherr).

PEAR PSYLLA (Psylla pyricola) - CONNECTICUT - Hard shells and adults numerous at New Haven, New Haven County, and Storrs, Tolland County. (Savos). PENNSYLVANIA - First summer-generation nymphs on pears at Yakima and Gleed, Yakima County, June 2. (Hudson et al.).

EUROPEAN RED MITE (Panonychus ulmi) - MICHIGAN - Increased rapidly in orchards prior to heavy rains of June 5; present in 60 percent of orchards in Grand Rapids area. Typhlodromus fallacis (a phytoseiid mite), a predaceous species, found on ground cover and tree trunks in orchards June 5 near Belding, Ionia County; appears heavier this season, should move into trees next 14-28 days. (Olsen). NEW JERSEY - P. ulmi increased on apples in several Atlantic and Camden County blocks. (Ins.-Dis. Newsltr.).

PECAN NUT CASEBEARER (Acrobasis nuxivorella) - TEXAS - Eggs on tips of pecan nutlets in Wilbarger County June 2. Cool nights latter part of last period slowed moth emergence. Rain interfered with spraying in north-central area. Moderate to light in Schleicher, Sutton, Nolan, McCulloch, Runnels, Sterling, Tom Green, Concho, and Llano Counties. Cool, wet weather extended egg laying and hatching in Taylor County. Damage ranged 5-20 percent in Brazos County. (Boring et al.). OKLAHOMA - Red and white eggs ranged 6-12 percent on pecans in Rogers County. Oviposition over in southern counties as all eggs red or already hatched. (Okla. Coop. Sur.).

FALL WEBWORM (Hyphantria cunea) - ALABAMA - First-generation broods developed on pecans, elderberry, and other trees in Dale, Pike, and Jackson Counties. (Hubbard et al.). TEXAS - Active on pecan trees in Lee, Brazos, Nolan, and Uvalde Counties. Uvalde area reported as many as 10-12 webs per tree. (Cole et al.).

WALNUT CATERPILLAR (Datana integerrima) - TEXAS - Built up on pecans in De Witt, Bastrop, Travis, Fayette, Lee, Gonzales, Matagorda, and Wharton Counties. (Cole).

PECAN SPITTLEBUG (Clastoptera achatina) - MISSISSIPPI - Infestations as heavy or heavier than in 1974. Problem areas in Webster, Marshall, Quitman, Hinds, Pike, and Lowndes Counties. (Robinson).

## SMALL FRUITS

GREEN FRUITWORM (Lithophane antennata) - MICHIGAN - Third to fifth instars fed on apples at Grand Rapids, Kent County. Damage very extensive at Hart, Oceana County; also infested sweet cherries. Population much heavier in all areas this year. (Cater, Schwallier).

BLUEBERRY BUD MITE (Acalitus vaccinii) - NORTH CAROLINA - Infestations slightly lighter in Pender County, about equal in Duplin County, and much greater in Bladen County, compared to 1971, 1972, and 1973 data. (Hunt, Weaver).

## FOREST AND SHADE TREES

NANTUCKET PINE TIP MOTH (Rhyacionia frustrana) - ALABAMA - Second-generation larvae heavy; damaged shortleaf pines on lawn in Mobile County. (Vickery). OKLAHOMA - First-generation adults emerged from infested pines in McCurtain County. Full-grown larvae and pupae found. (Okla. Coop. Sur.).

ELM LEAF BEETLE (Pyrrhalta luteola) - KANSAS - Few first instars on Siberian elms in Sherman and Decatur Counties. (Bell). OKLAHOMA - First-generation pupation in Tillman County. (Okla. Coop. Sur.). TEXAS - Light to moderate in Sutton, Taylor, and Tom Green Counties. Appeared on elms in Panhandle. (Cole).

A WEEVIL (Polydrusus impressifrons) - OREGON - Adults ragging leaves of red oak in Gresham area field nursery, Multnomah County. This is a new county record. Collected by Nicolaison May 30, 1975. Determined by R.L. Westcott. (Nicolaison).

FALL CANKERWORM (Alsophila pometaria) - NEW YORK - Infestation found in mixed hardwoods in Steuben County. Defoliation 100 percent in small blocks, ranged 40-60 percent in others. (Clift). PENNSYLVANIA - Larvae numerous on shade trees in Elk, Cameron, McKean, and Potter Counties May 27-29. Larvae on apple and oak trees in Elk County on May 28. Heavy population annoying residents. Larvae on oak trees in Dauphin County June 1 caused noticeable defoliation. (Shillington et al.). Larvae of Paleacrita vernata (spring cankerworm) and A. pometaria noted on apple and oak trees in Warren County June 2. Heavy populations developing over 10-square-mile area. (Hall). INDIANA - Fall cankerworm damage extensive to variety of trees north of South Bend, St. Joseph County. (Miller, Schuder).

PACIFIC TENT CATERPILLAR (Malacosoma constrictum) - CALIFORNIA - Larvae heavy; damaged black oak foliage at Corning, Tehama County. (Cal. Coop. Rpt.).

A NOCTUID MOTH (Melipotis indomita) - TEXAS - Larvae heavy; defoliated mesquite trees in Rolling Plains area. Moderate to heavy in Tom Green and Concho Counties. (Cole).

## MAN AND ANIMALS

SCREWWORM (Cochliomyia hominivorax) - Total of 80 cases reported from continental U.S. during period May 18-24 as follows: Texas 79, Arizona 1. Total of 156 cases confirmed from Mexico. Number of sterile flies released in U.S. this period totaled 104,912,000 as follows: Texas 93,887,000; New Mexico 2,592,000; Arizona 8,433,000. Total of 65,076,000 sterile flies released in Mexico. (Vet. Serv.).

HORN FLY (Haematobia irritans) - KENTUCKY - Adults ranged 25-50 per animal in Fayette County. (Barnett, Herald). MISSISSIPPI - Adults up to 1,000 on beef and dairy cattle in all sections. (Robinson). ARKANSAS - Ranged 400-600 per head on untreated cattle in Benton County test herd. (Boyer). TEXAS - Light in Archer County, moderate to heavy in Young County, light in Nolan, Runnels, McCulloch, Sutton, and Schleicher Counties. Moderate in Llano, Taylor, Concho, Tom Green, and Sterling Counties. Adults heavy in Gillespie County. Active in High Plains and Panhandle counties. Moderate on beef cattle in all Blackland counties. (Boring et al.). OKLAHOMA - Ranged 400-800 per head on cattle in Major County and averaged 300 per head in Payne County week ending May 30. Currently, populations averaged 450 per head on yearlings, 500 per head on cows, and 3,000 per head on bulls in Payne County. Heavy in Wagoner County. (Okla. Coop. Sur.).

NEBRASKA - About 350 horn flies per head on cattle in Lincoln, Keith, and McPherson Counties. (Campbell). NORTH DAKOTA - Five per animal on range cattle in Billings County and 15 per animal in Golden Valley County. (Brandvik).

NORTHERN CATTLE GRUB (*Hypoderma bovis*) - WISCONSIN - Adults running cattle in western Dane and La Crosse Counties. (Wis. Ins. Sur.).

FACE FLY (*Musca autumnalis*) - MARYLAND - Adults ranged 6-22 per head on dairy and beef cattle in central area week ending May 30, populations increasing. (U. Md., Ent. Dept.). KENTUCKY - Adults per animal ranged as follows by county: Warren 25-30, Fayette 40-50, Mercer 60-80, Union 30. (Barnett, Knapp). ALABAMA - Collected from cattle in Cullman County by B. Baswell May 23, 1975. Determined by H. Cunningham. This is a new county record. Occurrence of flies and pinkeye related to this pest serious in Lauderdale County. (Halla). MISSISSIPPI - Appears to be another severe year. Infestations on cattle ranged up to 20-25 per face in areas infested in 1974. Eye problems in many herds in Monroe, Pontotoc, Union, Marshall, and Calhoun Counties. (Robinson). ARKANSAS - Ranged up to 200 per head on cattle in Washington County and 50-60 per head on untreated cattle in Benton County. First finds in State since 1969. (Boyer). OKLAHOMA - Light on cattle near Morrison, Noble County, May 23 and near Ponca City, Kay County, May 24. Collected and determined by J.H. Young. These are new county records. Heavy on Craig County cattle. Currently heavy on Cherokee cattle. (Okla. Coop. Sur.).

MOSQUITOES - MASSACHUSETTS - Ten-minute nighttime bite collections May 31 to June 6 totaled: *Aedes stimulans* 1, *A. sticticus* 53, *A. fitchii* 3, *A. vexans* 2, *Aedes* sp. 6. One daytime bite collection totaled: *A. stimulans* 2, *A. fitchii* 1, *A. canadensis canadensis* 1. (Drozdowski). WISCONSIN - *A. vexans* dominant biting species. Severely annoyed humans in portions of Marinette, Washburn, Outagamie, Juneau, Trempealeau, Chippewa, Dane, and Door Counties. Very severely annoyed cattle in parts of Calumet and Chippewa Counties. (Wis. Ins. Sur.). MINNESOTA - Spring *Aedes* spp. emergence complete. Main species *A. cinereus*, *A. excrucians*, and *A. fitchii*. Moderate brood of *A. vexans* completed emergence early in week of May 26; now dispersed from breeding sites. Heavy rains in western and northern areas resulted in another larval hatch. Heavy spring *Aedes* spp. and *A. vexans* populations present in many areas. *Aedes vexans* larvae moderate; adult emergence expected June 9. Currently, *A. vexans*, *A. cinereus*, and *Culiseta inornata* main species in larval samples. Light trap collections lighter than expected compared to nuisance levels. Presently, more males than females collected. *A. vexans*, *A. abserratus*, and *A. cinereus* predominant in trap collections. (Minn. Pest Rpt.).

AMERICAN DOG TICK (*Dermacentor variabilis*) - NEW JERSEY - Heavy in many areas. (Ins.-Dis.Newsltr.). WISCONSIN - Still very troublesome in wooded and brushy areas. Some specimens found as far south as Dane and Iowa Counties. (Wis. Ins. Sur.). OKLAHOMA - Numerous reports from many areas of State in past 2-3 weeks. (Okla. Coop. Sur.).

LONE STAR TICK (Amblyomma americanum) - OKLAHOMA - Heavy on cattle in Wagoner and Hughes Counties. (Okla. Coop. Sur.). TEXAS - Heavy on livestock at Uvalde, Uvalde County. (Stewart).

EAR TICK (Otobius megnini) - TEXAS - Light on cattle in Schleicher, Concho, and Llano Counties, heavy in Gillespie County. (McWhorter).

A MEGOSTIGMATIC MITE (Androlaelaps casalis) - CALIFORNIA - Unusual occurrence in reptile house of zoo at Sacramento, Sacramento County, caused much concern as epidemic populations present on reptiles. Mites moving over heads and bodies of snakes and lizards; irritating reptiles. Mites fall off reptiles into drinking water and ponds; floated on surface. This mite not a pest of reptiles, usually infests rodents. Source of infestation not yet determined. Problem being studied. Mites collected by W. Dejesus, determined by T. Kono, confirmed by M. Lavoipierre. (Lavoipierre, Hawthorne).

## HOUSEHOLDS AND STRUCTURES

CARPENTER BEE (Xylocopa virginica) - SOUTH CAROLINA - Following are new county records in 1975. Collected in house in Anderson County by L. Funkenstein May 23; determined by J.B. Kissam. Collected in roof trim in Pickens County by M.J. Johnson May 28; determined by V.H. McCaskill. Collected in garage in Greenville County by J.B. Kendrick May 31; determined by V.H. McCaskill. (McCaskill).

## BENEFICIAL INSECTS

A CINNABAR MOTH (Tyria jacobaeae) - OREGON - Adult flights appear to have peaked this week and last week near Mt. Angel, Marion County. (Kearns, Westcott).

A MYMARID WASP (Anaphes flavipes) - This egg parasitoid of Oulema melanopus (cereal leaf beetle) recovered from eggs as follows: VIRGINIA - In Frederick County near Gore June 3. MARYLAND - In Allegany County June 4, and Howard County June 2. DELAWARE - In New Castle County June 6. All above collections made by R. Dysart and R. Bingham. All above are new county records. WEST VIRGINIA - In Hampshire County by R. Dysart and R. Bingham June 3. PENNSYLVANIA - In Franklin Township, Armstrong County, by M. Garra June 15. In Toby Township, Clarion County, June 3. In Tionesta Township, Forest County, June 3. In Warsaw Township, Jefferson County, June 4. Last 3 recovered by Murningham and Shiner. NEW YORK - In West Bloomfield Township, Ontario County, by T. Crowe June 3. MICHIGAN - In Grant and Ensley Townships, Newaygo County, by D. Loree June 6. (PPQ).

LARVAL PARASITOIDS - Recovered from larvae of Oulema melanopus (cereal leaf beetle) as follows: OHIO - Tetrastichus julis (a eulophid wasp) in Jefferson Township, Fayette County, by J. Wheeler May 28. First time recovered in next 3 counties. Diaparsis spp. (ichneumonid wasps) and T. julis in Madison Township, Highland County, by J. Wheeler May 28. T. julis in Elizabeth Township, Miami County, by P. Turner May 28. T. julis in Harmony Township, Morrow County, by F. Prentice May 27. T. julis in field insectary in Preble County by J. Wheeler May 30. INDIANA - Diaparsis spp. and T. julis in field insectary in La Porte County June 5. (PPQ).

ICHNEUMONID WASPS - OKLAHOMA - Percent parasitism by *Bathyplectes curculionis* of *Hypera postica* (alfalfa weevil) larvae collected May 8-26 by county: Cimarron 68, Texas 83, Beaver 90, Woodward 91, Major 71, Woods 68, Garfield 82, Tulsa 100, Washington 74, Nowata 81, Craig 82, Roger Mills 58, Custer 17, Blaine 82, Washita 17, Canadian 49, Logan 85, Kingfisher 53, Muskogee 72, Wagoner 65, Harmon 14, Greer 52, Jackson 32, and Cotton 70. (Okla. Coop. Sur.). WEST VIRGINIA - Number of release sites for alfalfa weevil larvae parasitized by *B. anurus* and *B. curculionis* by county May 29-30: Hancock 2, Brooke 1, Ohio 2, Marshall 1, Pleasants 2, Wood 2, Hardy 1, Preston 1, Jackson 2, Mason 2. (Weaver, Hacker).

## FEDERAL AND STATE PLANT PROTECTION PROGRAMS

CEREAL LEAF BEETLE (*Oulema melanopus*) - VIRGINIA - Larvae damaged wheat and oats in Shenandoah County. Larvae averaged 0.6 per stem on 29 acres of wheat and 1.2 per stem on 15 acres of oats. Severe in 2 other oatfields of 20 and 30 acres each. First serious infestations observed in State. (Conklin, Allen). WEST VIRGINIA - Survey per square foot of oats. Larvae averaged 30 in oat strips in Ohio County; 90 percent of flag leaves had 80 percent damage by May 29. Average of 4 eggs and 3 larvae in Wood County. Eggs averaged 5 in Monroe County by May 30. Currently, eggs averaged one in Roane, Calhoun, Lewis, and Upshur Counties. (Tustin et al.). MARYLAND - Damage on spring oats expected to be very heavy in Frederick, Washington, Allegany, and Garrett Counties. Larvae in most heavily infested fields ranged 3-12 per stem week ending May 30. Peak damage expected next 14 days in western area. Populations and damage east of Frederick not expected to exceed light to moderate levels in spring oats. (U. Md., Ent. Dept.). PENNSYLVANIA - Survey of oats and wheat in 14 counties May 24-31: Adults 1-52 per 100 sweeps, and eggs 1-170 and larvae 1-58 per 10 foot-row; damage up to 20 percent. (Kim). NEW YORK - Larvae ranged up to 35 per square foot and 40-50 per 100 sweeps of small grains in Steuben County. Most fields in Tompkins, Seneca, and Cayuga Counties had 1-2 larvae per square foot. (Gaines et al.). MICHIGAN - Damaging populations on wheat and oats in Berrien County; much spraying underway. Two to three larvae per flag leaf common on flowering stage wheat; some flag leaves totally destroyed. Cumulative egg count averages ranged 286-326 per 2 linear feet of row through June 3 in Berrien County oat yield trials. Larval feeding damage appearing. Oats in 4 to 5-leaf stage. (Burger, Webster).

GRASSHOPPERS - OKLAHOMA - Nymphal surveys made in potential areas of economic infestations in northwest, west-central, southwest, and south-central counties during May. Economic populations developing in rangeland areas of Greer, Beckham, Roger Mills, Major, Woods, and Woodward Counties. Infestations spotty, hatch underway; ranged from first to third instar. Heavier populations of 10-20 nymphs per square yard in favorable areas. (Okla. Coop. Sur.). UTAH - First and second-instar nymphs light on rangeland on western slopes in Logan and Providence areas of Cache County. (Knowlton). WYOMING - Second to third-instar nymphs ranged 30-60 per square yard on rangeland in Goshen and Platte Counties. *Ageneotettix deorum*, *Amphitornus coloradus*, *Aulocara elliotti*, *Cordillacris occipitalis*, and *Melanoplus* spp. present. (Hardy, Patch).

NORTH DAKOTA - First and second-instar grasshopper nymphs ranged 1-25 (average 6) per square yard in Stark and Golden Valley Counties. Melanoplus bivittatus and M. sanguinipes dominant. (Brandvik). First-instar nymphs averaged less than one per square yard in field margins in Morton County and on wildlife refuge in Sheridan County. (Winks).

MORMON CRICKET (Anabrus simplex) - COLORADO - Nymphs economic on rangeland in Zenobid Basin near Dinosaur Monument, Moffat County. (PPQ).

GYPSY MOTH (Porthetria dispar) - PENNSYLVANIA - Aerial sprays applied between May 28 and June 2 in following counties: Luzerne 1,935 acres, Schuylkill 1,345 acres. (Kim). NEW JERSEY - Larval buildup in Monmouth, Ocean, and Cape May Counties. (Ins.-Dis. Newlstr.). RHODE ISLAND - Generally in third instar statewide; some fourth instars. (Gardner, Relli). MASSACHUSETTS - Generally lighter than in 1974 on test areas in Hampshire County. (Barbosa).

JAPANESE BEETLE (Popillia japonica) - ALABAMA - First adults of season. Swarms emerging and climbing up fescue and curly dock one mile northeast of Heflin, Cleburne County, an old infested area. (Stewart et al.).

## DETECTION

New State Record - SPOTTED ALFALFA APHID (Therioaphis maculata) - NEW YORK - Tompkins County. (p. 481).

### New County Records

AN OTITID FLY (Euxesta quaternaria) - FLORIDA - Adults collected in McPhail traps in Broward County March 24, 1975, by C.E. Stegmaier. Determined by G.C. Steyskal. (PPQ).

AN APHID (Acyrthosiphon sp., loti group) CALIFORNIA - Yolo. NEVADA - Esmeralda (p. 484). CARPENTER BEE (Xylocopa virginica) SOUTH CAROLINA - Anderson, Pickens, Greenville (p. 492). FACE FLY (Musca autumnalis) ALABAMA - Cullman. OKLAHOMA - Noble, Kay (p. 491). A MYMARID WASP (Anaphes flavipes) VIRGINIA - Frederick. MARYLAND - Allegany. DELAWARE - New Castle (p. 492). A WEEVIL (Polydrusus impressifrons) OREGON - Multnomah (p. 490).

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Weather of the week continued from page 496.

TEMPERATURE: At the beginning of the week on Monday, the average temperatures were near or a little below normal from the Rockies to the Appalachians. The East was above normal and a warming trend was starting in the Rocky Mountains and to the West. By midweek the cooler air had moved over New England giving slightly below normal temperatures there while the Southeast, South, and West were above normal. The Pacific coast stayed cool all week but inland temperatures rose above normal. The trend in temperature all week was for warming in the West and cooling in the East. The South was near normal all week. In the Corn Belt States, average temperatures for the week was 2-6 degrees below the normal all week, with the coolest period in the latter part of the week. One record high temperature was set at Florence, South Carolina, on Saturday with 98 degrees.

## LIGHT TRAP COLLECTIONS

| | Tempera-ture °F. | Precip-itation (inches) | Type of trap (BL = blacklight, I = incandescent, MV = mercury vapor, O = other) | Agrotis ipsilon (black cutworm) | Estigmene acrea (saltmarsh caterpillar) | Euxoa auxiliaris (army cutworm) | Faronta diffusa (wheat head armyworm) | Feltia subterranea (granulate cutworm) | Heliothis virescens (tobacco budworm) | H. zea (bollworm, corn earworm, tomato fruitworm) | Laspeyresia pomonella (codling moth) | Loxostege commixtalis (alfalfa webworm) | Loxostege rantalis (garden webworm) | Loxostege sticticalis (beet webworm) | Manduca quinquemaculata (tomato hornworm) | Manduca sexta (tobacco hornworm) | Ostrinia nubilalis (European corn borer) | Peridroma saucia (variegated cutworm) | Pseudaletia unipuncta (armyworm) | Spodoptera exigua (beet armyworm) | Spodoptera frugiperda (fall armyworm) | Spodoptera ornithogalli (yellowstriped armyworm) | Trichoplusia ni (cabbage looper) | Crops |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARIZONA | | | | | | | | | | | | | | | | | | | | | | | | |
| Mesa 5/26-6/1 | | | BL | 83 | | 5 | | | | 3 | | | | | | | | 31 | | 179 | | 12 | 9 | |
| FLORIDA | | | | | | | | | | | | | | | | | | | | | | | | |
| Gainesville 5/30-6/5 | | | BL | | 2 | | | 25 | | 1 | | | | | | 1 | | | | 1 | 6 | 4 | 1 | |
| INDIANA (Districts) | | | | | | | | | | | | | | | | | | | | | | | | |
| Southwest 5/30-6/4 | | | 3BL | 68 | 35 | | | | | | | | | | | | 240 | 61 | 251 | | | | | |
| Northwest 5/24-30 | | | BL | 5 | | | | | | | | | | | | | | 1 | 619 | | | | | |
| KANSAS | | | | | | | | | | | | | | | | | | | | | | | | |
| Great Bend 5/21-6/1 | | | BL | 50 | | 2250 | | | | 14 | | | | | | | | 50 | 175 | | | 17 | | |
| Manhattan 6/4 | | | BL | 8 | | 48 | | | | 6 | | | | | | | | 124 | 330 | | | 6 | | |
| KENTUCKY (County) | | | | | | | | | | | | | | | | | | | | | | | | |
| Fayette 6/2-6 | | | BL | 3 | | | | | | | | | | | | | 1 | | 45 | | | | 3 | |
| MICHIGAN (Counties) | | | | | | | | | | | | | | | | | | | | | | | | |
| Lenawee 5/26-6/2 | | | BL | 37 | | | | | | | | | | | | | 58 | 37 | 556 | | | | | |
| Oceana 5/27-6/2 | | | BL | 27 | | | | | | | | | | | | | | 34 | 148 | | | | | |
| MINNESOTA | | | | | | | | | | | | | | | | | | | | | | | | |
| Fergus Falls 5/28-6/4 | | | BL | | | | | | | | | | | | | | | | 72 | | | | | |
| Worthington 5/28-6/4 | | | BL | | | | | | | | | | | | | | | | 16 | | | | | |
| MISSISSIPPI | | | | | | | | | | | | | | | | | | | | | | | | |
| Stoneville 5/30-6/5 | 62-91 | 1.41 | 2BL | 56 | | | | 6 | 24 | 91 | | | | | | | | 941 | 437 | | | 44 | | |
| NEBRASKA | | | | | | | | | | | | | | | | | | | | | | | | |
| North Platte 5/30-6/6 | | | BL | 3 | | 24 | | | | | | | | | | | 1 | | 73 | | | | | |
| NORTH DAKOTA | | | | | | | | | | | | | | | | | | | | | | | | |
| Bottineau 6/3 | | | BL | | | | | | | | | | | 1 | | | | | | | | | | |
| Fargo 6/5 | | | BL | 1 | | | | | | | | | | | | | | 1 | 70 | | | | | |
| OREGON (Counties) | | | | | | | | | | | | | | | | | | | | | | | | |
| Linn 5/29-6/4 | | | BL | 1 | | | | | | | | | | | | | | 3 | | | | | | |
| Marion 5/29-6/4 | | | BL | 1 | | | | | | | | | | | | | | 3 | | | | | | |

## LIGHT TRAP COLLECTIONS

|  | Temperature °F. | Precipitation (inches) | BL = blacklight<br>I = incandescent<br>MV = mercury vapor<br>O = other<br>Type of trap | Agrotis ipsilon (black cutworm) | Estigmene acrea (saltmarsh caterpillar) | Euxoa auxiliaris (army cutworm) | Faronta diffusa (wheat head armyworm) | Feltia subterranea (granulate cutworm) | Heliothis virescens (tobacco budworm) | H. zea (bollworm, corn earworm, tomato fruitworm) | Laspeyresia pomonella (codling moth) | Loxostege commixtalis (alfalfa webworm) | Loxostege rantalis (garden webworm) | Loxostege sticticalis (beet webworm) | Manduca quinquemaculata (tomato hornworm) | Manduca sexta (tobacco hornworm) | Ostrinia nubilalis (European corn borer) | Peridroma saucia (variegated cutworm) | Pseudaletia unipuncta (armyworm) | Spodoptera exigua (beet armyworm) | Spodoptera frugiperda (fall armyworm) | Spodoptera ornithogalli (yellowstriped armyworm) | Trichoplusia ni (cabbage looper) | Crops |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PENNSYLVANIA (Districts) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Central 5/22-6/3 |  |  | BL | 23 | 2 |  |  |  |  |  | 3 |  |  |  |  |  |  |  | 84 |  |  |  |  |  |
| North East 5/22-6/3 |  |  | BL | 6 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 6 |  |  |  |  |  |
| SOUTH DAKOTA |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Brookings 5/29, 6/1-4 |  |  | BL | 3 |  | 1 | 17 |  |  |  |  |  |  |  |  |  | 4 | 4 | 54 |  |  |  |  |  |
| TENNESSEE (Counties) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Henry 6/4 |  |  | BL | 49 |  |  |  | 17 |  | 2 |  |  |  |  |  |  | 6 | 86 | 787 |  |  | 5 | 8 |  |
| Weakley 6/4 |  |  | BL | 12 |  |  |  | 25 |  | 1 |  |  |  |  |  |  | 2 | 79 | 359 |  |  | 1 | 9 |  |
| WEST VIRGINIA |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Monongalia 6/3 |  |  | 2BL | 10 |  |  |  |  |  |  |  |  |  |  |  |  | 3 | 4 | 189 |  |  |  | 1 |  |
| Randolph 6/3 |  |  | BL | 11 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 184 |  |  |  |  |  |
| WISCONSIN |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Lancaster 5/29-6/4 |  |  | BL |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 3 | 121 |  |  |  |  |  |
| Mazomanie 5/29-6/4 |  |  | BL | 1 |  |  |  |  |  |  |  |  |  |  |  |  | 16 |  | 25 |  |  |  |  |  |

Weather of the week continued from page 478.
severe weather on Wednesday from the Dakotas to western Pennsylvania and New York. Hail broke windows and tornadoes caused extensive property damage. Elsewhere, a line of thunderstorms continued in southern Florida and showers fell in the northern Rockies and intermountain area. Thunderstorms continued on Thursday in most of the eastern half of the Nation. A frontal system in the central part of the country set off early morning thunderstorms in Oklahoma, Kansas, Arkansas, and Missouri. Occasional heavy rain fell from New York through West Virginia. Scattered thunderstorms occurred in the Gulf Coast States and the northern Rockies. Tornadoes, hail, and flash floods were common along and ahead of the frontal system. Friday, thunderstorms ranged along the Atlantic coast from Maine through Florida then west through Louisiana and north through Arkansas, Missouri, Oklahoma, and Kansas. In north-central Mississippi 4.30 inches of rain was reported in just one hour. A few thunderstorms were found in west Texas and the Dakotas while some showers and isolated thunderstorms were showing up along the Western Slopes of the divide from Montana to Utah. Saturday saw major fronts on the coast of New England, through the central United States to Kansas and north through the western Dakotas. Behind the front was a much cooler and calmer air mass. However, in the more chaotic air south of the front, thunderstorms with their accompanying hail, wind, and tornadoes continued on their wild spree. The activity was most severe in the western Plains and in the South. Twin tornadoes hit in southwest South Dakota. The Texas Panhandle reported several tornadoes and hail. Flash floods occurred in Arkansas. Elsewhere, widely scattered showers and thundershowers dotted the Rocky Mountains and the central and northern Plateau region. There were some isolated thunderstorms in northeast California. The cool, calm air mass pushed southward on Sunday to the Deep South, west to the Texas Panhandle and north through central Kansas to the Dakotas. The entire northeastern third of the Nation experienced beautiful weather except for some lingering showers along the Northeast coast. Heavy rains and thunderstorms dominated the weather from northeast Texas through the Dakotas. Showers and thunderstorms also occurred all along the gulf coast. Showers were scattered through the northern Rockies. The most severe weather activity and the heaviest rain occurred in northeast Texas and the eastern portion of the central Plains States. Flash floods were reported all through this area. Reports of 3-4 inches of rain in an hour or so were frequent. Unofficial reports listed up to 7 inches of rain falling in eastern Kansas. Continued on page 494.

# Pheromone-Baited Traps for Detecting the Smaller European Elm Bark Beetle

J.W. Peacock and R.A. Cuthbert [1]

Introduction: The smaller European elm bark beetle (*Scolytus multistriatus* Marsham) was first found in the United States in 1909 at Cambridge, Massachusetts, (Chapman, 1910). In North America, this insect is now reported to occur in parts of southern Canada (Finnegan, 1957; Watson and Sippell, 1961) and in all the contiguous 48 States except Arizona, Florida, and Montana (Barger and Hock, 1971). The beetle is probably very abundant throughout the natural range of the American elm (*Ulmus americana* L.), except in the northern range of the elm, where cold temperatures may prevent beetle survival. The beetle is also present (and sometimes abundant) outside the natural range of the elm (for example, in the Great Plains and Western United States), where it reproduces in elms introduced for shade and windbreak purposes.

Because highly trained personnel are needed to confirm the presence of *S. multistriatus*, scouting reports from many States are based only on isolated observations in limited regions of a State. Although these reports delineate the general distribution of elm bark beetles, the presence of beetles has not yet been confirmed in many cities, especially on the fringe or outside the natural range of elms.

Before 1974, the only practical method for detecting *S. multistriatus* was to examine decadent elm wood for the presence of beetle emergence holes, or to use trap logs. However, a more simple and efficient detection system, utilizing pheromone-baited traps, was developed in 1974. This trapping system was subsequently used in 1974 to detect the presence of the beetle for the first time in certain locations. For example, in California, beetles were captured at traps located in five counties previously thought to be free of beetles (CEIR 24(44):842).

This is a description of the trapping system and its use as a survey tool. It includes a discussion of the significance of trap catches in determining beetle distribution and abundance.

Description of Trapping Technique: The trap (Fig. 1) is a 1-foot square piece of hardware cloth (1/4-inch mesh) coated with Stikem Special ®. (Mention of a particular product does not constitute an endorsement by the Forest Service or the U.S. Department of Agriculture. It is used here for the purpose of providing specific information.) Traps are coated by applying warm Stikem with a latex paint roller. Traps are attached by a wire to a shelf bracket nailed to the bole of a tree, to a utility pole, or to any standard at a height of approximately 10 feet. Double-headed nails are used for easy removal.

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"Multilure", the three-chemical attractant (Pearce et al., 1975) used to bait the traps, is dispensed from a polyethylene snap-cap vial wired to the center of the trap. The attractant diffuses slowly through the walls of the vial. Vials are attractive in the field for 3 to 5 weeks, depending on the amount of attractant initially sealed in the vial. Baited traps are installed in field locations about the time of suspected beetle emergence, or about the time of "mouse-ear" leaf development in American elm.

Traps should be inspected at least every 2 weeks to determine the presence of trapped beetles. Beetles may be counted on the screen without removal, provided only a few beetles have been trapped. When large numbers of beetles are on the screens, or when positive identification is not possible in the field, it may be necessary to remove the trap, replace it with a freshly coated screen, and return the used screen to a facility suitable for subsequent microscopic examination and counting of beetles.

Stikem is removed from the beetles by bathing the specimens in kerosene before microscopic examination. The hardware-cloth traps can be reused by soaking off the old Stikem in a kerosene bath (at room temperature), followed by application of fresh Stikem.

Discussion: Pheromone-baited traps provide an effective, efficient, and practical method for detecting the presence of S. multistriatus. However, the capture of beetles at traps merely indicates their presence; trap catches are not necessarily an index of abundance. The number of beetles caught on a trap reflects their abundance in the general area at that time; but other factors, such as weather, time of year, and proximity of traps to beetle-breeding sites (decaying elms) can also affect the number trapped.

The range of trap effectiveness is as yet unknown. However, it is very unlikely that beetles can be attracted to Multilure at distances exceeding 1 mile. It is reasonabile to assume that spacing traps at a density of 2 per square mile would give effective detection of the beetle in most situations.

Studies are now in progress to improve the trapping technique. These studies should provide an easier-to-use trap and a longer-lasting attractant dispenser for survey work in 1975. For additional information about trap deployment and interpretation of results, interested parties should contact the authors.

## Acknowledgements

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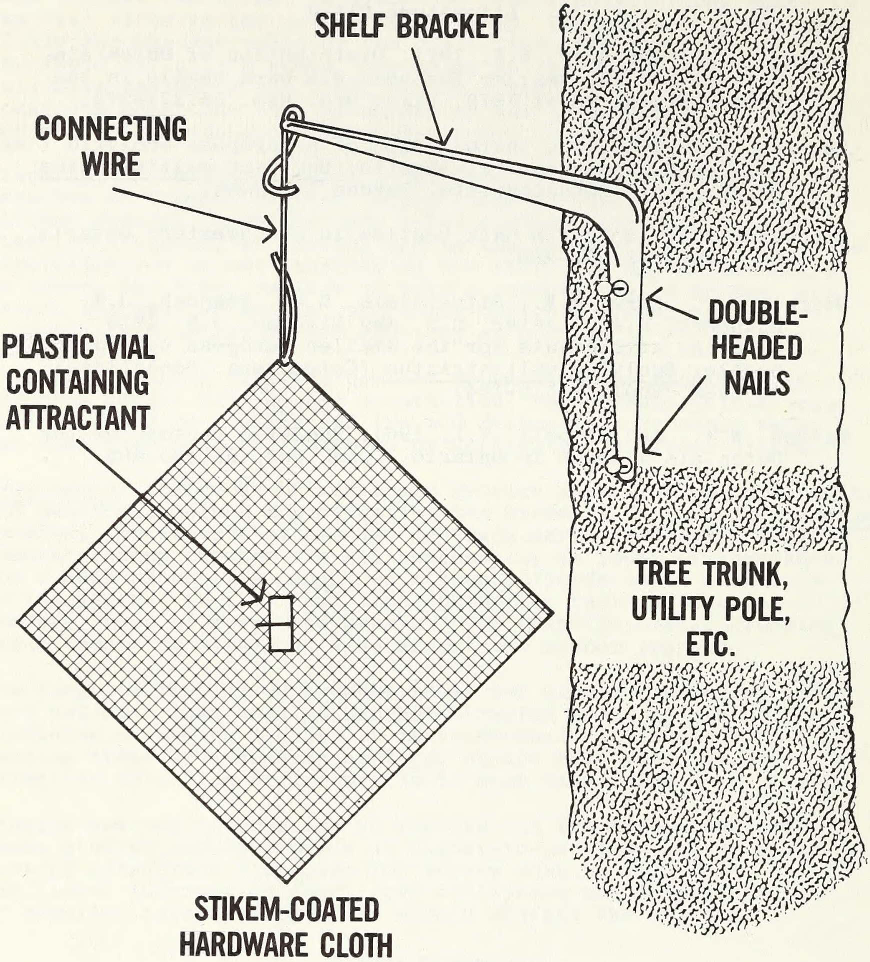
SHELF BRACKET
CONNECTING WIRE
PLASTIC VIAL CONTAINING ATTRACTANT
DOUBLE-HEADED NAILS
TREE TRUNK, UTILITY POLE, ETC.
STIKEM-COATED HARDWARE CLOTH

Figure 1.--Diagrammatic representation of attractant-baited trap for detection and survey of *Scolytus multistriatus* populations.

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